Air Integration in the Heavy Division:
First Attack's Lessons Learned from the NTC

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The process of air-ground integration is the most complex and important step to an attack aviation unit's ability to dominate the enemy on the battlefield. Done well, it allows aviation assets to be the combat multiplier that facilitates the ground unit's mission accomplishment with minimal casualties. Done poorly, it can easily lead to confusion, fratricide, and mission failure.

The 1st Battalion, 227th Aviation Regiment (First Attack), 1st Cavalry Division, Fort Hood, Texas, deployed in support of 1st Brigade Combat Team (1BCT) to the National Training Center (NTC) for rotation 03-03. This article explains the fundamentals learned that allowed First Attack to evolve from a unit struggling to support the ground battalion, into a dominant force on the battlefields of the NTC. This article is written in three parts to highlight the three key phases of air-ground integration: the liaison process with the brigade combat team; the integration with the ground battalion during the mission planning cycle; and the mission execution phase.

Liaison Mission Planning With the Maneuver Brigade

"Effective liaison between Army aviation units and supported elements is imperative." [1]

To be an effective aviation LNO to a mechanized or armor brigade, the officer must know the supported maneuver brigade's planning standard operation procedures (PSOP), the military decision-making process (MDMP) and U.S. Army Field Manual (FM) 101-5, *Staff Organization and Operations*, and lessons learned/trends from sources such as the Center for Army Lessons Learned (CALL), and the NTC. [2]

National Training Center 03-03 rotation served as the 1st Cavalry Division's first "digital" rotation. The division deployed 1st Brigade as the maneuver headquarters and the division tactical command post (DTAC), and 4th Brigade tactical air command (TAC) to serve as white cell. Among the deployed battalion sized task forces, TF Attack, lead by 1-227th Aviation Battalion supported the division deep fight as well as 1BCT's close fight. The TF Attack liaison officer (LNO) to the 1BCT had a magnitude of responsibilities that equally affected the aviation liaison officer's responsibilities regarding the integration of air and ground during brigade level planning and mission execution. This article serves as lessons learned for junior officers serving as aviation LNOs for the first time. Reading and understanding tactics, techniques, and procedures (TTP) from someone who has served as an aviation LNO can only enhance another officer's experiences and make our military more effective in defeating the enemy.

Experience. Habitual training with the supported ground unit is extremely valuable and critical to not only understanding how the maneuver brigade fights and integrates aviation, but it also enables the LNO to develop a relationship with the planning staff. Familiarization with the brigade PSOP ensures the LNO is adequately prepared to participate in the MDMP. The PSOP establishes the timeline and unique method in which the planners execute the mission-development process. My experience with 1BCT included external evaluations (EXEVALs) and NTC 03-03. The 1BCT S3 and XO progressively improved their MDMP TTPs as the training progressed. Beginning during the EXEVALs, 1BCT received the mission and conducted a mission analysis brief. Their MDMP was fast paced and left little time to break contact and receive guidance from the commander before planning began. Time permitting, the aviation battalion commander provided guidance before going into the course of action (COA) development and wargaming. It is critical to note that without the means to communicate with the aviation commander, the LNO must know the tactical SOP (TACSOP) — or know how the commander employs his aircraft. The 227th commander fought by his TACSOP and when all else failed, his "standard play" was to maneuver companies with economy of force forward to exploit the capabilities of the Longbow and its fire control radar.

COA development TTP. During the COA development and into wargaming, the LNO shoulders the responsibility of including attack and lift aviation assets in accordance with the aviation commander's intent, and in such a manner that facilitates the ground scheme of maneuver. One important TTP is depicting "pro-

posed" graphics for all COAs during the MDMP. The proposed graphics allow for deconfliction of routes and attack-by-fire positions (ABFs), as well as assist in fires coordination. Each COA maintains separate graphics, and with proposed aviation graphics, once a COA is selected and wargamed in a time constrained environment, the graphics can be published as is. The aviation task force can then develop their plan knowing the air coordination measures are guides for planning within the ground scheme of maneuver. With the operation order (OPORD) in hand, TF Attack refined the initial plan and pushed changes to the LNO for integration at the brigade level. The aviation LNO then ensured the subordinate graphical changes were incorporated, deconflicted, and present on all rehearsal boards and digital equipment in the 1BCT TOC.

Fires deconfliction. As the aviation LNO at 1BCT, the most difficult Army airspace command and control coordination piece to deconflict was indirect fires and location of "known" positioned artillery areas (PAAs). The aviation LNO depicted the "proposed" flight routes and ABFs during COA development and wargaming, but once the battalion had their two-thirds time to plan and submit graphics, it was extremely difficult to ensure the fires were clear. I attended the fire support rehearsal with the aviation fire support officer (FSO) before each mission. At the rehearsal, I briefed task and purpose along with scheme of maneuver, while the FSO discussed planned targets, as well as templated suppression of enemy air defense (SEAD), if available. Together, we attempted to synchronize our plan with the brigade fire support plan to ensure deconfliction and timing. During this process, we experienced several conflicts when routes established at battalion level needed to be altered to facilitate the fire support plan. In addition to ensuring the fires plan was synchronized, we also discussed fire support coordination measures to mitigate risk and reduce fratricide. Fires deconfliction is continuous through mission completion or change of mission at the NTC.

Task and purpose. FM 1-111, *Aviation Brigade*, states, "The LNO recommends methods of employing aviation forces into the scheme of maneuver to maximize the capabilities of the aviation force."[3] During the COA development, the aviation LNO recommended possible missions, as well as task and purpose for attack and lift aviation assets in support of the ground commander's mission. The most effective way to communicate

the recommended aviation COA is by task and purpose. This communication serves two purposes — the planning staff at the brigade receives a clearly defined aviation concept and, as with all COA developments and wargaming, the Battlefield Operating System (BOS) cards assist in writing the order. A clearly stated task and purpose allows the armor or infantry captain writing the final OPORD to express the aviation mission in aviation language. Make time during orders production to ensure the aviation piece is written correctly and addresses everything the aviation task force is to accomplish in support of the ground scheme of maneuver. Conducting quality control during orders production resulted in the aviation LNO spending less time at the battalion planner level sending requests for information (RFI) to brigade, and more time shaping and refining the aviation commander's concept into a succinct and lethal mission.

Tools/information. Ensuring that the LNO has the proper tools/information to be effective while planning at the higher headquarters is a must. At a minimum, the LNO must provide the ground commander with accurate combat power, to include status of forward area rearm/refuel points (FARPs) and resupply concerns. According to FM 1-111, the LNO must be armed with at least an SOP addressing:

- Unit organization, capabilities, limitations, and status, such as aircraft, vehicles, and personnel.

- Aviation operation employment roles, employment principles, and missions.

- Aircraft capabilities and limitations by type.

- Aviation staff estimate.

- Specific checklists, such as air assault, deep attack, and air movement tables.

- Common equipment weights.

- Safety briefing checklist.

- Class III/V (FARP) operations, capabilities, and limitations.

- Class V configurations.

- Maintenance considerations.

- Crew endurance/fighter management.

- LNO equipment list.[4]

Any ground commander will be especially concerned with capabilities, employment roles, FARP status, and crew endurance/fighter management. Typically, the brigade gives battlefield update briefs (BUB) to the brigade commander

and these items are generally of great interest, whether briefing him prior to a mission or going into mission development.

Ground scheme of maneuver. The aviation LNO must understand the ground scheme of maneuver. Without an understanding of the ground maneuver task and purpose, the aviation LNO cannot properly plan to support the ground scheme of maneuver. The LNO can identify what missions the aviation commander can conduct to not only shape but also support the ground fight. In addition to understanding the ground maneuver for planning purposes, it is likely that the aviation commander or S3 may require an update. A large part of the liaison process revolves around effectively communicating the ground maneuver to the aviation battalion.

Staff estimates. A thorough knowledge of the ground scheme of maneuver and the aviation battalion commander's intent also enables the LNO to contribute meaningful running staff updates during the conduct of a mission. Often the enemy or friendly situation was not developed as the brigade planned and in the TOC, the brigade XO huddled the BOS representatives for staff estimates. Only by constantly monitoring battalion nets and voice communications with the battalion S3 or battle captain, was the aviation LNO able to make informed analysis and estimates. In one particular instance, the brigade XO directed a new course of action for the staff to estimate and derive alternative task and purpose for each BOS. The brigade commander expected a recommended COA from the XO and he in turn relied on the individual experts to say how to best use their assets. Running staff estimates and situational awareness is the only way to make informed analysis and estimates.

The liaison officer is critical to the aviation unit's success. Nothing replaces the direct coordination between the ground commander and the aviation commander, but the LNO's involvement in mission planning and execution is critical. Successful integration between air and ground derives from knowing how the aviation commander intends to fight his unit, and applying that intent allows the ground commander to achieve his objective. If the aviation mission remains flexible and allows the aviation commander to place attack and lift assets at the critical point in the fight while maintaining the ability to deconflict direct and indirect fires, then the LNO properly communicated, coordinated, and synchronized the aviation commander's intent into

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the ground plan. Being an LNO to any unit is a tough learning experience — go into it armed with the proper tools and information to be the most effective liaison officer you can be.

Mission Planning With the Ground Battalion

Of the six force-on-force missions flown by Bravo Company, 1-227th Aviation Regiment (The Reapers) during the NTC 03-03 rotation, five directly supported 2d Squadron, 5th Cavalry (Mech) and 2d Squadron, 8th Cavalry (Armor). For an attack battalion organic to a heavy division, there is no reason to think that our wartime mission would be any different. Hence, it is critical that we understand and master the complexities surrounding air-ground integration. Lessons learned and applied during EXEVALs and previous NTC missions, allowed B Company, 1-227 to evolve from being unable to receive a single clearance to engage during EXEVALs, to being one of 1BCT's most deadly forces on the battlefield — credited for 28 percent of OPFOR vehicles destroyed in their area of operation. The Reapers discovered that the key to success (and increased success) lies not in the pilots' flying or targeting abilities, but rather in the ability of the ground commander to understand how to best employ weapons systems to accomplish the mission.

This process begins at home station by using officer professional development (OPD). The Reapers used a hands-on approach, which began by scheduling a day for a sister ground unit to visit The Reap-

ers' hanger to see the aircraft. Aviators gave the ground unit leaders instruction on the AH-64D's capabilities and limitations, fostering discussion on the development of future air-ground TTPs. A week later, the ground unit returned the favor and the aviators went to their motor pool to receive an OPD on their mission and equipment. Working ground commanders and platoon leaders into the front seat of simulator periods will also pay big dividends during mission execution. Follow up that training with platoon-level battle drills during the ground unit's force-on-force field training exercise, refined TTPs, and share knowledge with battalion and brigade staffs through formal after-action reviews and an OPD prior to deploying.

During home station training, we learned the strengths and weaknesses of the Apache when applied in the close fight. The AH-64's strengths included speed of maneuver across the depth of the battlefield; the ability to detect and observe targets well forward of a ground unit's scouts; and the ability to employ direct fire well forward of direct (and sometimes indirect) fire systems. The AH-64's weaknesses included limited ability to positively identify targets under the first generation of forward-looking infrared (FLIR); vulnerability to man-portable air defense systems (MANPADS) and small-arms fire; limited station time and power limitations in high temperature and high pressure altitude environments.

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mander would develop a plan without attack helicopter support then attempt to work aviation assets into the plan afterwards. This type of planning resulted in the ground commander preventing the aviation unit from helping him accomplish his mission with fewer casualties. In contrast, a well-developed, well-rehearsed air-integration plan will maximize the strengths and ameliorate the weaknesses of the Apache in the close fight. Below is a brief discussion on each of the five fundamentals of air-ground integration planning. This discussion summarizes each fundamental and highlights how applying — or failing to apply — air-ground integration can make the difference between mission success and mission failure. The fundamentals of air-ground integration include:

Liaison with the ground unit. The Attack helicopter company must provide a liaison to the ground unit who understands the brigade plan and will remain with the ground battalion from MDMP through rehearsal. If done correctly, the liaison becomes the most important person to the success of the Apache unit's mission, even though it is likely that the liaison will be out of duty day to fly the mission himself. The purpose of the liaison is to help the ground commander realize how to best use Apaches to accomplish the mission. This may include convincing the ground commander to change his key tasks to allow the Apaches to operate safely in their attack-by-fire positions, enabling them to facilitate mission accomplishment. For example, a heavy

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unit ground commander will most likely bypass air defense artillery (ADA) and MANPADS during an attack, unless antitank systems are attached. However, if he understands that by focusing his scouts or artillery on destroying those systems, he will allow the Apaches to safely destroy the enemy, and protecting his final objective, he may make the destruction of ADA a key task. The liaison is like Tom Cruise talking to Cuba Gooding Jr. in the movie *Jerry McGuire*, "Ground Commander, help me help you!"

To have the respect and attention of the ground battalion staff during MDMP, the liaison needs to be a platoon leader, or very senior warrant officer. Sending a junior warrant officer often results in the ground unit ignoring his advise. It is the responsibility of the aviation liaison to ensure that the following four fundamentals are considered and applied to the plan during MDMP:

Plan to employ Apaches decisively at a selected few decisive moments in the battle. Due to Apache's vulnerability to MANPADS and small-arms fire, performing "over-the-shoulder" operations above a moving heavy unit, which may bypass enemy ADA and dismounts, will inevitably end in failure. Instead, force the ground unit to identify the key moments in the battle and focus using Apaches on deciding the battle through dominating the enemy during those moments.

In essence, use Apaches to shape the battle so the ground unit can retain the initiative, rather than using Apaches in a reactionary manner through "911 calls." Destroying an enemy unit protecting an obstacle, stopping a counterattacking force, destroying enemy vehicles in defilade, or pulling flank security as a friendly unit maneuvers through an open valley, are all example of how Apaches can shape the battle at decisive moments. For the remainder of the time, Apaches should not hover above potentially bypassed enemy locations, but instead wait in a holding or assembly area on the friendly side of the enemy front-line trace.

Ensure the Apache commander platoon leader talks directly to the ground company commander in contact during mission execution. During the mission window, nothing is more essential to mission accomplishment than situational awareness. Those who fly Apaches understand that FLIR's limitations can make situational awareness extremely difficult, and the Longbow's Fire Control Radar cannot tell friend from foe. Once the ground battalion commander has determined that a decisive moment of the battle has arrived, he must trust the person who has the best situational awareness to use Apache support decisively. Usually, that person can be a ground company commander, a platoon leader, S3, or scout platoon leader. The battalion commander can always reach the Apache air mission commander or platoon leader on the company net if he needs them.

Establish direct communication between Apache leaders and the ground battalion's fire support officer (FSO), both during the planning and execution phase. During the mission, the brigade FSO will not allow artillery to be called into a moving ground unit's battlespace unless it comes from that ground unit's own fire direction center (FDC). Therefore, the Aviation unit's FSO is useless in processing calls for fire from line of departure time forward. The Apache unit liaison must establish a connection during MDMP so that Apache leaders can call artillery directly through the ground unit's FSO. Due to the ability of the fire control radar and the target acquisition data system to pick up targets well beyond the ground unit's standoff range, this link has the potential of being the key to mission accomplishment with minimal casualties.

Establish progressive control measures to deconflict fires and prevent fratricide. Once Apaches are asked to positively identify targets under FLIR in a battle where friendly and enemy vehicles are intermixed, their effectiveness is about 25 percent of the control measure beyond which Apaches know they are cleared to fire. In the Longbow, where such control measures can be built in the automated mission planning system and

visually depicted on the tactical situation display page, the importance of using planned and briefed control measures is magnified. Most importantly, the control measures need to be progressive, meaning as the battle develops and the friendly ground forces advance, the control measures must move forward as well. We found the most successful control measures were restricted fire lines or phase lines. As the lead company commander advances through zone, he changes the active control measure to keep it just ahead of the friendly front-line trace, allowing his Apache support to interdict and destroy enemy units prior to them making contact with friendly forces.

These fundamentals cannot be successfully discussed or applied for the first time during mission execution. They need to be applied during the mission's planning, briefings, and rehearsals. If the mission timeline does not allow for a liaison to participate in the ground unit planning process, every effort needs to be made to establish some sort of communication with the ground commander using radios or Force XXI battle command brigade and below (FBCB2). Apaches, even the Longbow, can be rendered useless to the ground commander if they are asked to save, rather than shape, the battle. In the world of air-ground integration, the battle can be won or lost before it even begins.

Battle Execution: Real Time Integration

Once the groundwork has been laid, the plans integrated and the liaison work completed, the final step is integration in real time on the battlefield. For the air-ground integration plan to succeed, leaders must adapt on a fluid, and often nonlinear, battlefield. The keys to success once the fight begins are communication, intelligence, maneuver, clearance of direct fires, and integration of indirect fires.

Communication. It is imperative that communication is established between the ground maneuver and Apache elements at the lowest level. An Apache team or platoon leader should be talking directly with the ground commander or the forward-most company in contact. This focuses the Apache's efforts in the most timely and accurate manner. During simultaneous operations, such as close combat attacks, screens, and deliberate attacks, the Apaches must be able to communicate directly with the ground fire support element (FSE) and the ground S2. Without direct communication, the other elements required for success are impossible.

Ideal communication would involve the Apache team/platoon leader speaking directly to the forward company commander in contact. During the most successful fights during NTC Rotation 03-03, company commanders of engaging elements passed targets directly to the Apaches for destruction. This method of direct target handover proved to be very effective. Once the grid was passed, the Apaches could store the new target, slave to the vicinity, and engage. The need for any further identification was unnecessary. While they did this over the battalion net, it would have worked to "declutter" the communication, if the Apaches could be pushed down to the company net.

Perhaps the greatest challenge in communicating comes in adding yet another voice to an already crowded ground maneuver net. However, it is not recommended to have a separate FM frequency for the Apaches to communicate with the ground commander. Monitoring the ground maneuver's battalion frequency greatly enhances situational awareness for the Apaches.

Intelligence. On arrival in the battlespace, the Apaches need to establish direct coordination with the ground maneuver element for an intelligence update. Due to the time this consumes, if radio communication is possible, it should be accomplished prior to departing the holding area. Doing this on a separate frequency allows for a more thorough handover than could be done on the command net.

Critical information is required from the ground maneuver S2 and includes front-line trace, location of scout platoons, bypassed enemy, combat observation lasing team (COLT) locations, and the progress of the ground unit in the fight. This information enables the Apaches to make initial adjustments to their original plan and react accordingly. Also, the location of scout platoons and the COLT platoon provides initial controls for direct and indirect fires.

Providing the progress of the ground unit during their maneuver can be accomplished very succinctly by using key words from a common event/time matrix. This is a quick method of providing critical situational awareness. Armed with this information, and based on the liaison work, the Apaches can adjust the restricted fire line and coordinated fire line and additional control measures without further coordination.

Maneuver. To control movement and maneuver in zone, Apaches use many

control measures similar to ground maneuver units. These must be the same for the ground and air assets. This negates confusion and clutter on maps, and facilitates a common maneuver language.

When selecting air availability balance fires (ABFs), the liaison should ensure that they directly support decisive points in the ground scheme of maneuver. When occupying hasty ABFs, it is important for the Apache to consider the location and activity of friendly maneuver elements. Avoid occupying preplanned or hasty ABFs that have ground forces collocated with them. The dust and wind effects of a hovering Apache degrade the effectiveness of the friendly forces to observe and engage the enemy. The Apache is a high pay-off target for the enemy commander, and therefore, naturally attracts indirect fire. To avoid drawing indirect fire on friendly positions, do not collocate Apaches in ABFs with friendly forces present.

Clearance of direct fire. Clearance of direct fires is the most critical element of air-ground integration once the fight has begun. To prevent fratricide, there must be a standard and well-rehearsed method of clearance for direct fires. The front-line trace cannot be as simple as a north-south grid line, if friendly and enemy forces are not clearly separated by that grid line. It is better to use an event matrix that corresponds with progressive control measures that incorporate the expectation of a nonlinear front-line trace. Otherwise, situational awareness can become blurred, and each target will have to be cleared one by one, slowing down the fight tremendously, and threatening the security of the Apache's waiting for clearance to fire. In different portions of the zone, the front-line trace will be different. Therefore, the front-line trace needs to be given in north-south grids, with an accompanying east-west line to provide breadth of control.

For example, instead of calling front-line trace positions, the ground commander can call event "EMILY," which means 15 minutes from breach, front-line trace as depicted, Apaches clear to destroy enemy platoon overwatching the obstacle from K51, preparatory fires on K51 complete.

The most significant challenge in clearing direct fires comes in dealing with the intermixing of friendly and enemy forces. For this reason, it is important to reiterate how critical bypassed enemy locations are in the battle handover. If the

ground elements are not tracking very specifically, or are not passing that information to the Apaches, maneuver in zone behind the front-line trace can quickly become a quagmire. If the enemy forces are in such proximity to preclude the use of indirect fires, the Apaches must have specific location of bypassed elements to engage them prior to operating in the zone. Without the ability to engage enemy behind the front-line trace, the Apache becomes extremely vulnerable as it maneuvers in zone.

Clearance of indirect fires. The final critical piece of air-ground integration is clearance of indirect fires. The key to efficient integration of indirect fires is division of tasks. It is most effective to use the ground maneuver FSE for targets of opportunity and the FSE supporting the aviation brigade for suppression of enemy air defense and ABF preparatory fires. If done correctly, dividing fires between the ground and aviation FSEs increases the available fires while decreasing the response time.

For this concept to be effective, it is critical for the targeting officer of the ground maneuver unit to understand the needs of aviation. While ADA does not pose a significant threat to the elements on the ground, it is difficult for Apaches to assist the ground scheme of maneuver, and for that reason, known ADA must be included in the ground maneuver concept of fires. During maneuver in zone, it is critical for Apaches to call for fires directly to the ground FSE on their net. For this to be effective, the ground commander must understand and incorporate the threat to aviation in his fires. Therefore, each FSE much coordinate fires through liaison and fire support rehearsals. Once in the battlespace, the critical piece to integration of indirect fires is to deconflict the location of COLT and scout elements with ABFs. For Apaches to operate in the close fight, they must have the availability of indirect fires to prepare the ABFs. Without this, Apaches are susceptible to surface-to-air missiles that have been bypassed or undiscovered by ground maneuver elements.

When the leader of the ground maneuver element is able to communicate directly with the Apaches on station and provide them accurate and timely situation updates of both friendly and enemy elements, the Apache can maneuver to best shape the battlefield. The integration of direct fires, tied to decisive events of the ground maneuver scheme, and accurate and timely integration of indirect fires, are the ultimate goals of air-ground integration. The final result is a quick, coordinated, and efficient destruction of the enemy.

Notes

[1]U.S. Army Field Manual (FM) 1-100, *Aviation Operations*, U.S. Government Printing Office, Washington, DC, 21 February 1997.

[2]FM 101-5, *Staff Organization and Operations*, U.S. GPO, Washington, DC, 31 May 1997.

[3]FM 1-111, *Aviation Brigades*, U.S. GPO, Washington, DC, 27 October 1997.

[4]Ibid.

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